

WHAT IS CLAIMED IS:

1. An optical apparatus comprising:
an optical device arranged on an optical path
extending from a light source to a predetermined
5 position;
an optical sensor; and
a measuring device which measures an optical
characteristic or a change in optical characteristic of
said optical device on the basis of an output from said
10 optical sensor,
wherein said optical sensor is arranged outside
the optical path.
2. The apparatus according to claim 1, wherein said
optical sensor senses light scattered by said optical
15 device.
3. The apparatus according to claim 1, wherein said
optical sensor senses a scattered light scattered by a
substance generated from said light source and
deposited on said optical device.
- 20 4. The apparatus according to claim 2, wherein the
apparatus further comprises a second optical sensor
arranged outside said optical path to sense light
directly incident from the light source, and
said measuring device measures the optical
25 characteristic or the change in optical characteristic
of said optical device on the basis of an output from
the second optical sensor in addition to the output

from said optical sensor.

5. The apparatus according to claim 1, wherein said optical sensor senses light which is emitted from a second light source arranged outside the optical path and is reflected by said optical device.

6. The apparatus according to claim 1, wherein said optical sensor senses light which is emitted from a second light source arranged outside the optical path and is scattered by said optical device.

7. The apparatus according to claim 1, wherein said optical sensor senses light which is emitted from a second light source arranged outside said optical path and is scattered by a substance generated from said light source and deposited on said optical device.

8. The apparatus according to claim 1, wherein the apparatus further comprises a second light sensor arranged outside the optical path to sense light,

said optical sensor senses light which is emitted from a second light source arranged outside the optical path and is reflected by said optical device,

the second optical sensor senses light which is emitted from the second light source and is scattered by said optical device, and

said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of an output from the second optical sensor in addition to the output

from said optical sensor.

9. The apparatus according to claim 8, wherein the apparatus further comprises a memory which stores information indicating a correlation between the optical characteristic or the change in optical characteristic of said optical device and a detection or measurement result of light which is emitted from the second light source and is reflected by said optical device, and

10 said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of the output from said optical sensor and the correlation.

10. The apparatus according to claim 8, wherein the apparatus further comprises a memory which stores information indicating a correlation between the optical characteristic or the change in optical characteristic of said optical device and a detection or measurement result of light which is emitted from the second light source and is scattered by said optical device, and

said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of the output from the second optical sensor and the correlation.

11. An optical apparatus comprising:

an optical device arranged on an optical path

extending from a light source to a predetermined position;

a deposition amount sensor; and

a measuring device which measures a deposition
5 amount of a substance generated from the light source
and deposited on the optical device on the basis of an
output from the deposition amount sensor,

wherein the deposition amount sensor is arranged
outside the optical path.

10 12. The apparatus according to claim 11, wherein the
apparatus further comprises:

a memory which stores information indicating a
correlation between the optical characteristic or the
change in optical characteristic of said optical device
15 and the deposition amount of the substance deposited on
said optical device, and

said measuring device derives the optical
characteristic or the change in optical characteristic
of said optical device on the basis of an output from
20 the deposition amount sensor and the correlation.

13. The apparatus according to claim 1, wherein said
optical sensor senses light which is emitted from a
second light source arranged outside said optical path
and passes through said optical device.

25 14. The apparatus according to claim 1, wherein the
apparatus further comprises a second light sensor
arranged outside the optical path to sense light,

said optical sensor senses light which is emitted from a second light source arranged outside the optical path and is scattered by said optical device,

the second optical sensor senses light which is
5 emitted from the second light source and passes through said optical device, and

said measuring device measures the optical characteristic or the change in optical characteristic of said optical device on the basis of an output from
10 the second optical sensor in addition to the output from said optical sensor.

15. The apparatus according to claim 1, wherein the light source comprises an EUV light source.

16. The apparatus according to claim 15, wherein said
15 EUV light source is a laser plasma light source.

17. The apparatus according to claim 1, wherein said optical characteristic is reflectance.

18. The apparatus according to claim 1, wherein the apparatus further comprises a projection optical system
20 for projecting a pattern onto a substrate and is configured as an exposure apparatus.

19. A measurement method comprising steps of:

arranging an optical device on an optical path extending from a light source to a predetermined
25 position; and

measuring an optical characteristic or a change in optical characteristic of the arranged optical

device, on the basis of an output from an optical sensor arranged outside the optical path.

20. A semiconductor device manufacturing method comprising steps of:

- 5 coating a substrate with a photosensitive agent;
 transferring a pattern onto the substrate coated
with the photosensitive agent in the coating step using
an optical apparatus as defined in claim 18; and
 developing the photosensitive agent on the
- 10 substrate bearing the pattern transferred in the
exposure step.